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THE COMMERCIAL MARINE FISH LANDINGS OF HAWAII, 1961-75

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The fishery resources outside the immediate vicinity of many of the central and western Pacific islands have not been fished extensively. For these areas, there is a need to obtain estimates of the types of resources available and extent of these resources in order to provide for orderly development and management. The size and value of the fishery resources will undoubtedly contribute materially to the decision as to how these resources will be utilized; e.g., to meet domestic protein needs or exported for foreign exchange.

While definitive stock assessments of tropical fishery resources are needed, a first approximation of the type and size of the fishery resources in various island areas can be obtained by reviewing ongoing fisheries operating in areas with similar ecological habitats. The data from the existing Hawaiian Islands fisheries should provide considerable insight to the type and size of fishery resources one could expect from other island areas.

The following is a brief summary of the commercial fisheries of the Hawaiian Islands with special emphasis on the catch statistics from 1961 through 1975.

#### Fishery resources

The marine fauna of the Hawaiian Islands is typically of Indo-Pacific origin. Although the species complex is not as rich as in other areas of the Pacific, especially the western Pacific, it has been reported that there are about 682 species of fish in the Hawaiian Islands; however, fewer than 50 species contribute materially to the commercial fish landings.

The Hawaiian Archipelago consists of a series of volcanic islands, atolls, and banks ranging from Hawaii located to the southeast at 19°N latitude, 155°W longitude, to the Kure Island located at 28° 30'N latitude, 178°30'W longitude. The chain can be separated into two basic units; one the lower eight main islands which are mostly inhabited and of recent volcanic origin, and the northwestern Hawaiian Islands which are geologically older, uninhabited except for Midway Islands and French Frigate Shoals and which consist of extensive banks and atolls.

While some exploratory fishing has been carried out in the Northwestern Hawaiian Islands, the bulk of the commercial fishing effort has been concentrated around the main islands in the lower part of the Hawaiian chain.

Fishing played an important and active role in the lives of the ancient Hawaiians. A survey of the commercial fisheries of the Hawaiian Islands

by John N. Cobb in 1901 indicated the total landings of fishery products in 1900 to be around 7,381,572 pounds. Although new resources are still being uncovered, e.g., deep-water shrimps (Struhsaker and Aasted, 1974), the fishery resources around the main Hawaiian Islands have been actively fished for decades. The pole and line fishery for skipjack was started in the early 1900's (Yamashita, 1958). Detailed data on the commercial catch have been recorded since the mid-1940's. Unfortunately, the catch and effort data from the recreational fishing sector are not presently being collected. Since recreational fishing effort is increasing dramatically, the total catch of this sector will undoubtedly become an important portion of the total catch. The total landings for Hawaii ranged from 4,400 metric tons in 1975 to a high of 8,900 metric tons landed in 1965. As shown in Figure 1, the bulk of the catch is made up of skipjack tuna. The fluctuations noted in the annual landings are dictated by the performance of the skipjack fishery. The ex-vessel value of the catch ranged from \$3.5 million in 1975 to \$5.2 million in 1965. Except for the recent increasing trend noted in 1975 the catch of other species has remained relatively constant during the 1961-75 period, ranging between 1,500 and 2,000 metric tons. The species listed in the "Others" category are taken by a variety of fishing methods and gear including handline, gillnet, traps, bag nets, longline, and surface trolling.

Figure 2 shows the fish landings from longline, deep handline, shallow handline, trolling, and "Others."

The Hawaiian longline fishery which at one time contributed significantly to the total commercial fish landings in Hawaii showed a marked decline in landings during the 1961-75 period. The decline from 959 metric tons to 334 metric tons in 1975 probably reflects a complex of reduced fishing effort along with lower catch rates. The landings of the deep-handline fishery, which includes the pink and red snappers, groupers, and other deep demersal fish species, declined in recent years and ranged between 175 and 200 metric tons. The catch shows an increase in 1975. There are indications that this fishery may increase in the coming years with the expansion of the fishery into the Northwestern Hawaiian Islands. Recent surveys by the National Marine Fisheries Service in the Northwestern Hawaiian Islands gave evidence of the presence of commercial quantities of deep-handline fishery resources, as well as of lobsters (Uchida and Hida, MS). The catches of the shallow-handline fishery, which generally takes place outside of the fringing reefs, include mackerels, goatfishes, squirrelfish, and jacks. The catch of this fishery approximated that of the deep-handline fishery and ranged in the neighborhood of 150 metric tons. As noted in Figure 2 the catches for both the deep-handline and shallow-handline fisheries have not changed materially during the 1961-75 period. The catches made by the troll fishery include fish caught by recreational boats and sold on the commercial markets. These include billfishes, tunas, mahimahi, and wahoo. The recent increases are probably attributable to the increased catches of yellowfin tuna by the recreational

boats. In recent years recreational fishermen have learned that trolling in the vicinity of dolphins often results in catches of yellowfin tuna. A detailed breakout of the principal species caught by the deep-handline fishery is shown in Figure 3. The three most important species taken in this fishery are the opakapaka (Pristipomoides microlepis), onaga (Etelis carbunculus), and ehu (Etelis marshi). The landings of these three species all showed some fluctuations during the 1961-75 period. The details of the shallow-handline fishery are shown in Figure 4. As indicated the opelu and akule catches from this fishery were roughly the same, averaging roughly 50-60 metric tons. It should be noted here, however, that the total akule landings are considerably higher than the opelu landings since the bulk of the akule catch is currently made with bag nets.

The average price per kilogram of the three principal species caught by the handline is shown in Figure 5. From around 1967, there was a general increase in prices with very marked increases for the opakapaka and hapu'upu'u. The ex-vessel price of opakapaka increased from \$1.04 per kilogram in 1961 to \$2.38 in 1975. Next in importance was the hapu'upu'u (Epinephelus quernus) which increased from \$1.15 per kilogram in 1961 to \$2.35 in 1975. The akule (Trachurops crumenophthalmus) was the only species which showed a decrease in price during the 1961-75 period. During the 1961-75 period the akule price reached a high in 1963 of \$1.64 per kilogram. This declined to a low of \$0.79 per kilogram in 1968 and since then has increased to a high of \$1.26 per kilogram in 1975. The decrease in akule prices from 1964 has been attributed to a market increase in landings for this species. As indicated earlier the akule catches from the bag nets increased substantially during the 1960's.

### Literature cited

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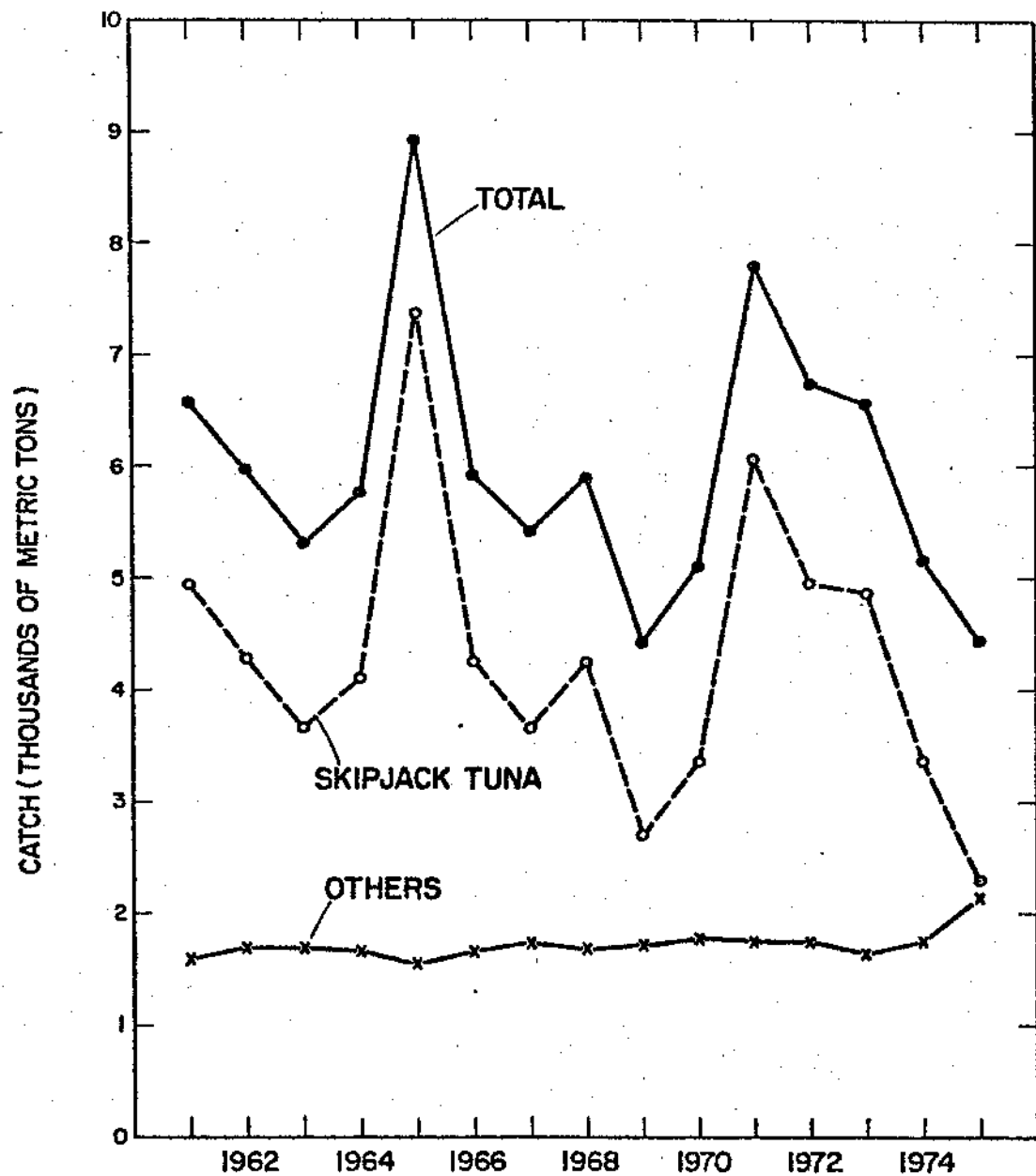


Figure 1.--Hawaii fish landings, 1961-75.

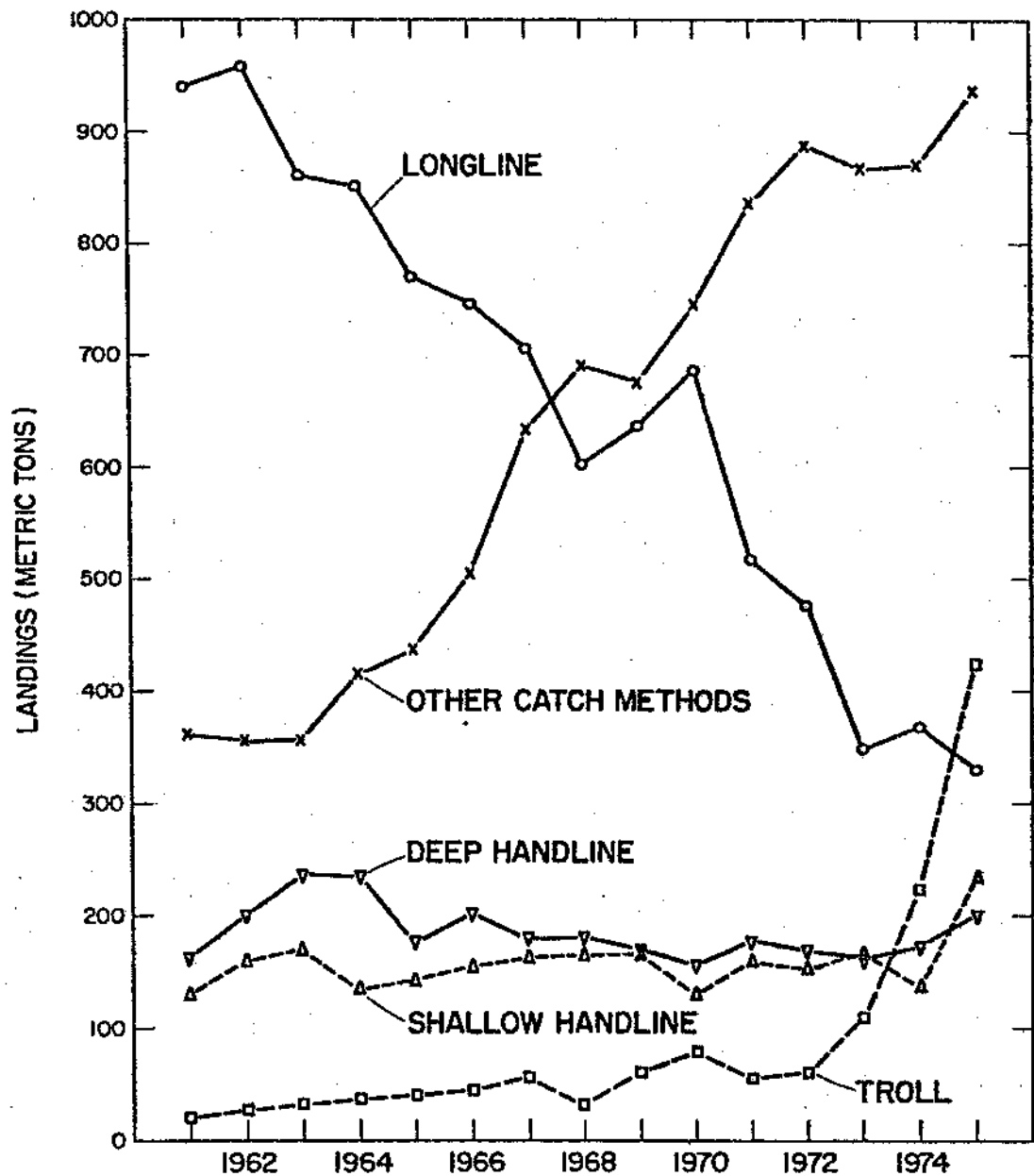


Figure 2.--Hawaii fish catch by gear.

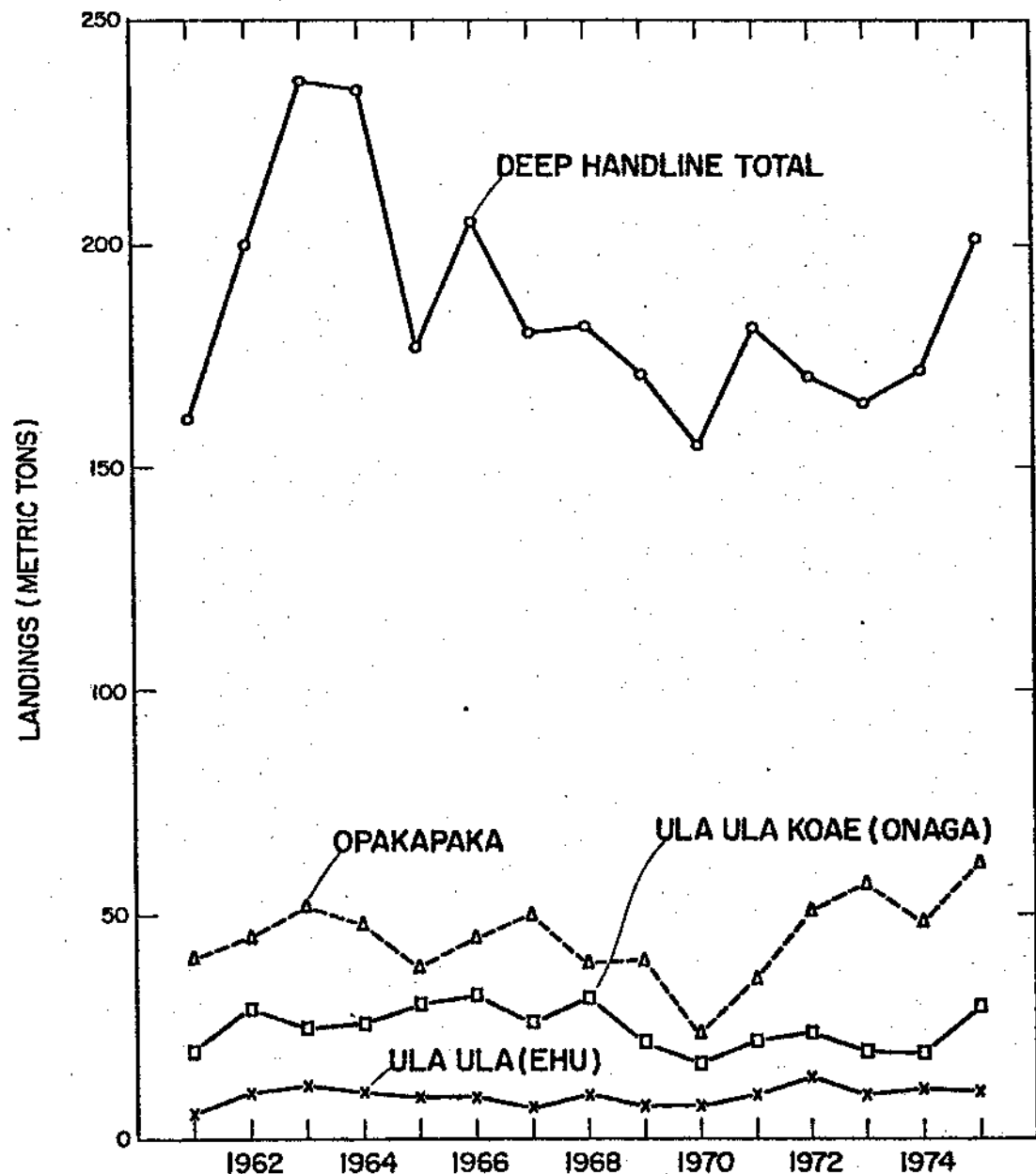


Figure 3.—Catch of the Hawaiian deep handline fishery, 1961-75.



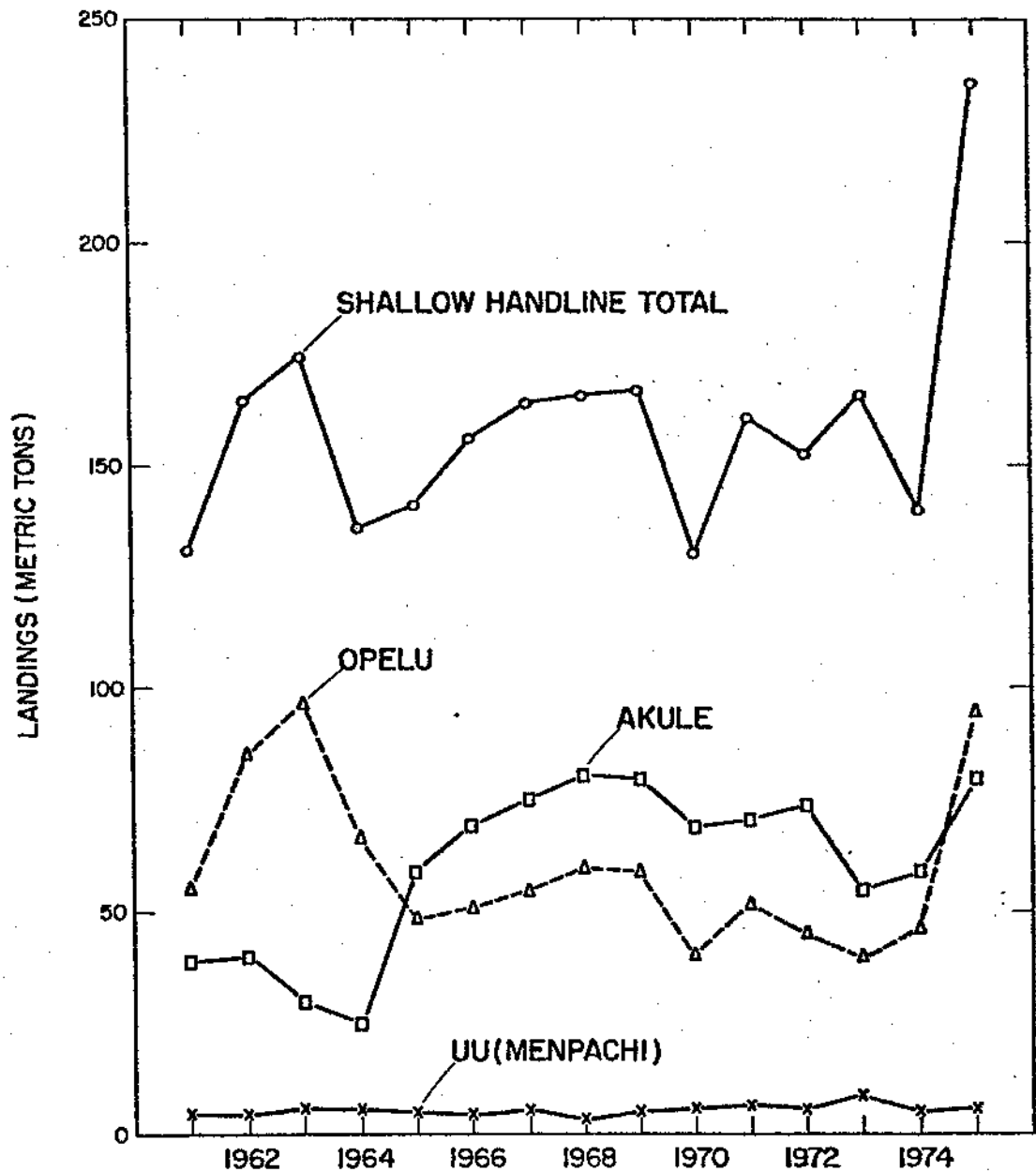


Figure 4.—Catch of Hawaiian shallow handline fishery, 1961-65.

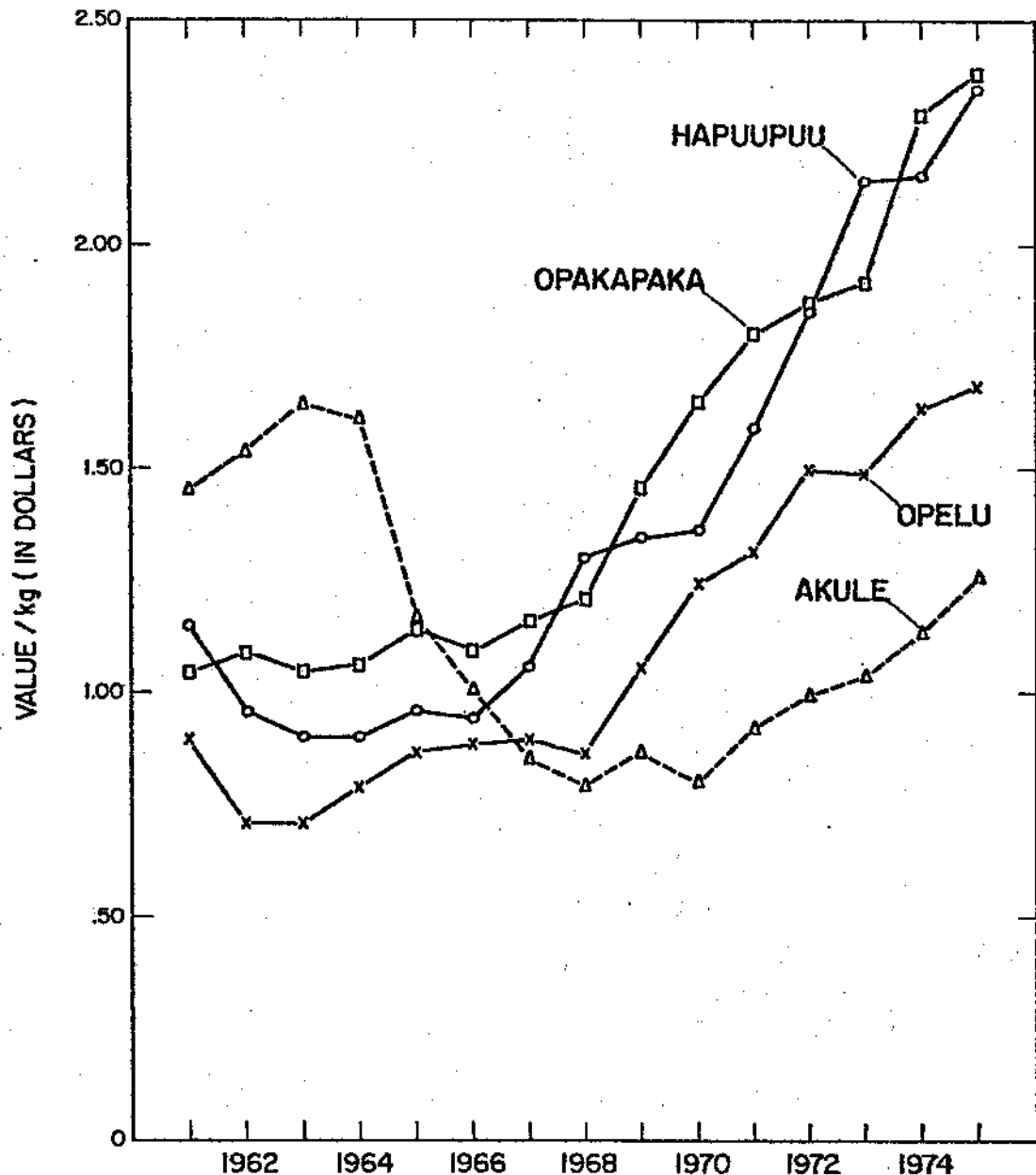


Figure 5.--Ex-vessel price of four principal species caught with handline gear.